

FIGURE 5-10. BIG DRY CREEK RESERVOIR OPTION

Kings River Watershed - Pine Flat Dam Raise

Description of Options

Pine Flat Dam and Reservoir are located in Fresno County, near the community of Piedra, about 30 miles east of Fresno. The dam is on the Kings River at RM 95, about 20 miles downstream of its confluence with the North Fork of the Kings River (Figure 5-11).

Pine Flat Dam, a concrete gravity structure completed by the COE in 1954, is 429 feet high, with a crest elevation of 916.5 feet (MSL). A 165 mW power plant operated by Kings River Conservation District (KRCD) is located at the downstream base of the dam on the right side. A PG&E power plant and penstock (Kings Power Plant) is located on the upper margin of Pine Flat Reservoir.

The proposed option involves increasing the gross pool elevation of the reservoir by 20 feet, resulting in 124,000 acre-feet of additional storage. This would be accomplished by raising the dam crest 12 feet and replacing the existing 42-foot wide by 36-foot high tainter (radial) gates with 59 foot high gates. Modifications to other features at the dam would also be required. This option would also require raising the PG&E Kings River Power Plant 21.5 feet and reconfiguration of the Pine Flat Power Plant at the toe of dam. Additional water stored in the enlarged Pine Flat Reservoir would be released to the Kings River to supplement CVP deliveries or to offset water released from Millerton Lake.

Engineering and Environmental Findings

Although engineering features for this option would be extensive, as described above, no technical constraints were identified that would limit their design or construction. However, potential environmental impacts of raising the gross pool of Pine Flat Reservoir by 20 feet would be considerable. In a 2001 report, the COE identified environmental impacts associated with a 15-foot raise. These include periodic inundation of up to 300 acres of riparian, oak woodland, oak savannah, and grassland habitat, and about 1.75 miles of the Kings River upstream of the reservoir for about 5 percent of the time between mid-May and late August each year. The enlarged reservoir would extend to a point just below the portion of the Kings River that is designated as a Special Management Area, within which no development is allowed without Congressional authorization.

Inundation of about one mile of rapids during the late spring and summer would adversely affect rafting and trout fishing uses. The raised reservoir would also partially or fully inundate several recreation facilities along the north shore of the reservoir and along the river just upstream of the reservoir gross pool limit. These facilities provide for day use, camping, boat launching, moorage, as well as a take out point and base camps for whitewater boating. Reservoir expansion would also inundate terminal points of tributary streams where foothill yellow-legged frogs and western pond turtles are likely. Valley elderberry longhorn beetles, a threatened species (Federal), are also present throughout the area.

The COE dropped this option from their flood control study on the basis of environmental issues. For the Investigation, this site will be retained for consideration of water supply opportunities on the San Joaquin River. The evaluation will consider using and enlarged Pine Flat Reservoir to support water exchanges between Millerton Lake and Pine Flat Reservoir water users.

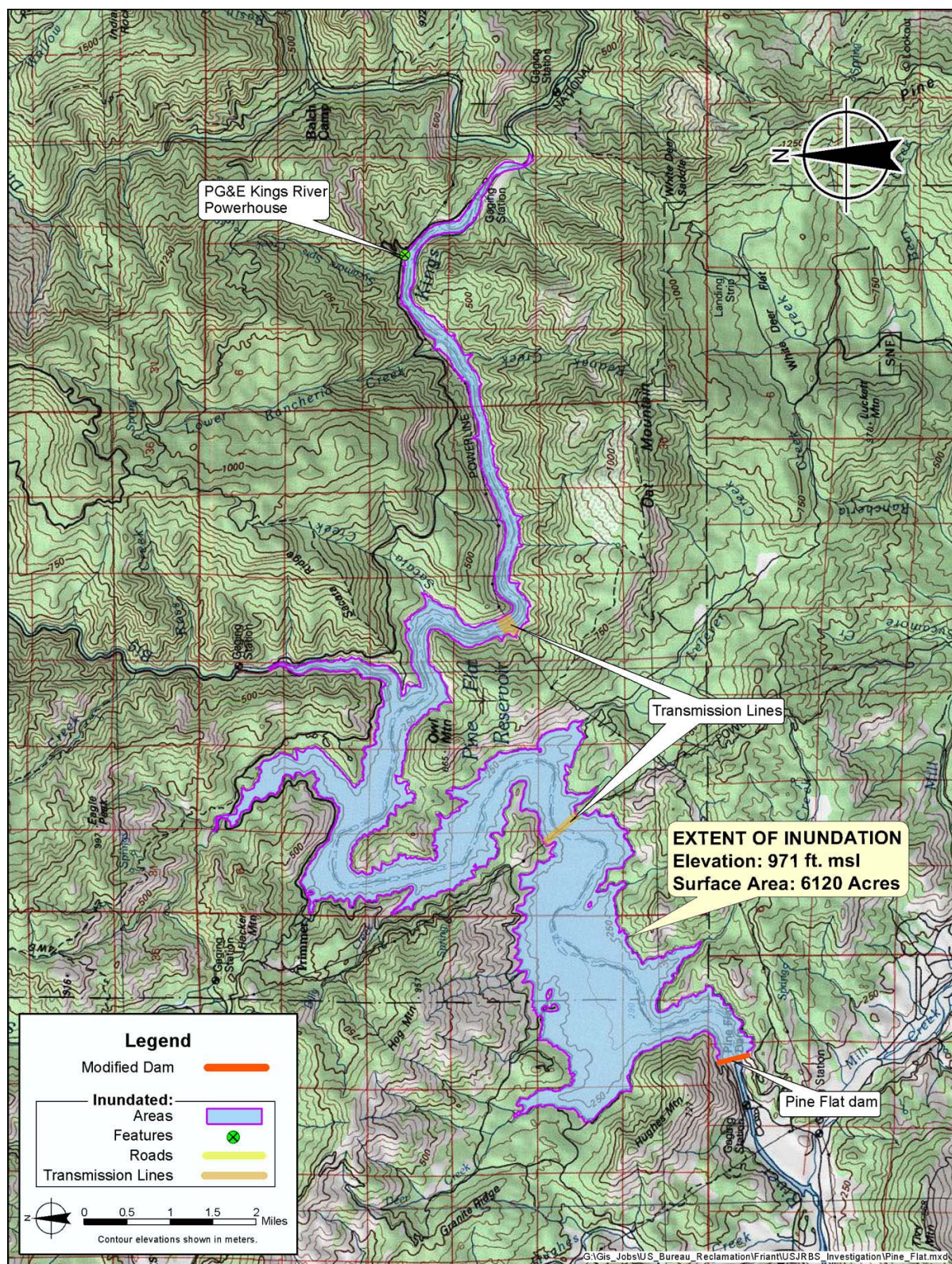


FIGURE 5-11. PINE FLAT RESERVOIR ENLARGEMENT OPTION

Kings River Watershed - Mill Creek Dam and Reservoir

Description of Options

Mill Creek flows into the Kings River approximately 1.7 miles downstream of Pine Flat Dam. A dam could be constructed on Mill Creek, approximately 1.3 miles upstream of the confluence that would impound a reservoir with a storage capacity of up to 200,000 acre-feet (Figure 5-12).

As previously considered by the Kings River Conservation District (KRCD) the new dam would consist of a zoned embankment structure up to 250 feet in height with a crest length of 3,700 feet at an elevation of 830 feet above mean sea level (MSL). Gross pool would be at elevation 800 feet msl. Flood flows in the Kings River would be diverted by gravity into Mill Creek Reservoir by means of a 5,000-foot long, 10-foot diameter, unlined conveyance tunnel. Stored water would be used to offset releases from Millerton Lake.

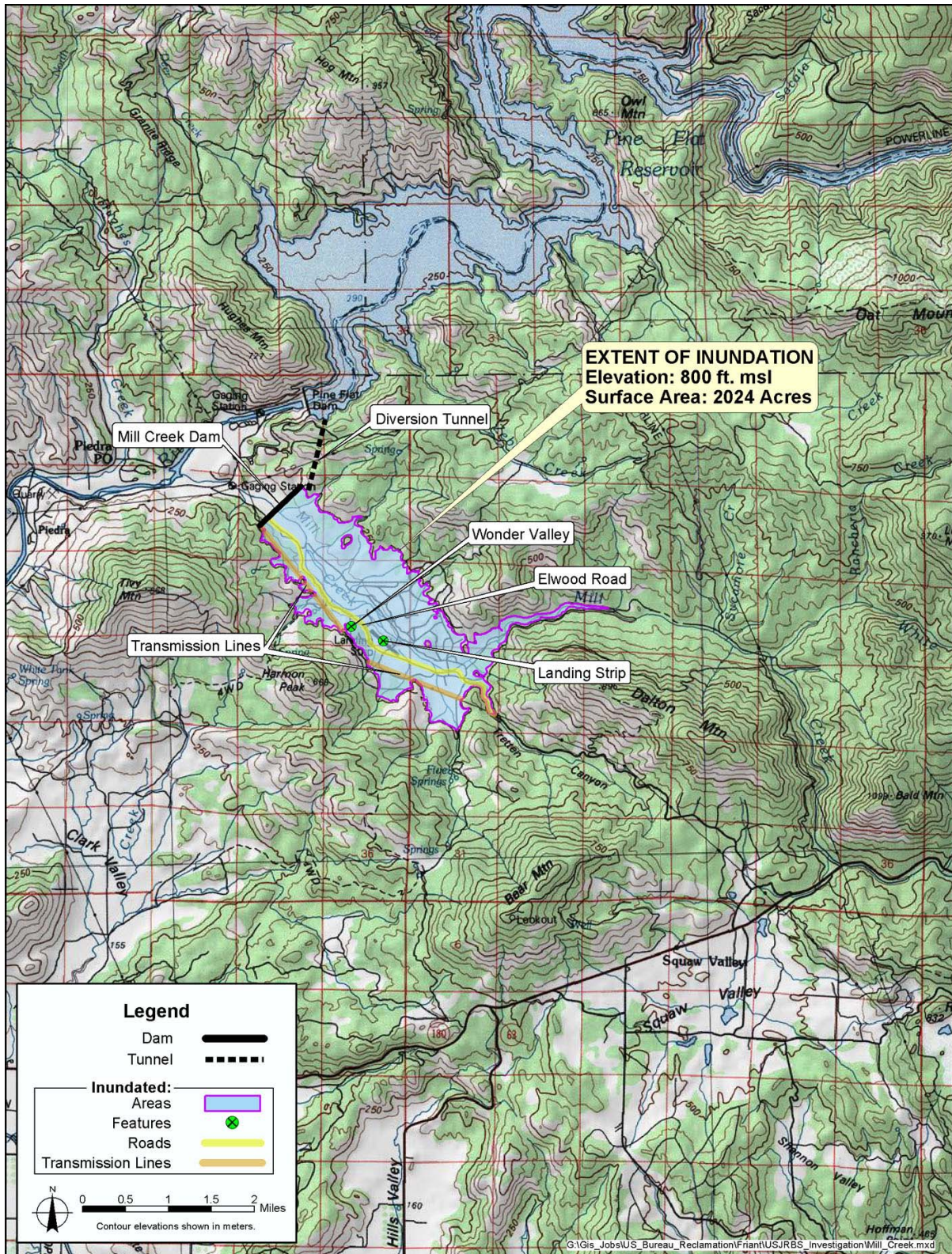
Engineering and Environmental Findings

No problematic issues are evident related to the physical capability to construct the proposed facilities. Foundation conditions include competent bedrock. Sufficient quantities of raw materials are nearby, the electrical grid is close, an existing road leads directly to the construction site, and a landing strip is within two miles. Staging area is more than adequate. Environmental concerns, however, are more extensive.

At maximum pool, the reservoir would inundate about 4.5 miles of Mill Creek. Mill Creek, a broad alluvial plain with a braided streambed, sustains a sycamore alluvial woodland (SAW), a sensitive habitat type that hosts a diverse assemblage of wildlife, particularly birds. An extensive SAW is located in the lower reaches of Mill Creek near its confluence with the Kings River (COE, 1994). Although sycamore trees are common, SAW has been described as a “very rare and essentially irreplaceable habitat type” (Carson, 1989). There are fewer than six viable occurrences and/or less than 2,000 acres in California and worldwide (Prose, 2002). Reservoir construction and water diversion are considered threats to SAW habitat, as sycamores have little tolerance to artificially manipulated water levels (Prose, 2002). Sexual regeneration of SAW depends upon substantial scour caused by flood events (Enstrom, 2002). Replacement of SAW is unlikely to be successful and its destruction is therefore unmitigable (Enstrom, 2002).

Fish species adapted to stream environments would also be negatively impacted, but fish suited to lake environments could benefit. The reservoir would provide excellent conditions for both cold-water and warm-water fisheries because its deep waters would likely stratify during the summer. The reservoir would inundate Wonder Valley Ranch, a 75-acre resort, conference center, and summer camp that provides a wide variety of recreational facilities. In addition to the ranch, several houses and ranchettes would be inundated.

In sum, site characteristics appear well suited to construction. However, because loss of SAW is considered unmitigable by resource agencies, this option will be dropped.



Kings River Watershed - Rodgers Crossing Dam and Reservoir

Description of Options

A potential dam at Rodgers Crossing would be located on the main stem of the Kings River at RM 116, approximately one half mile upstream of its confluence with the North Fork (Figure 5-13.). Two options have been studied previously; a roller-compacted concrete embankment dam up to 660 feet above streambed level that would create a reservoir up to 950,000 acre-feet, and a 400-foot high concrete arch dam that would create a reservoir up to 295,000 acre-feet. The larger dam would inundate about 10 miles of upstream river, and the smaller option would inundate about 8 miles of river. Stored water would be released to the Kings River to offset releases from Millerton Lake.

Engineering and Environmental Findings

The site appears to have suitable foundation conditions for construction of a dam. Raw material for a concrete dam is available – numerous outcrops of hard, resistant bedrock are evident within the vicinity of the damsite. All are potential quarry sites from which concrete aggregate could be obtained. PG&E owns electric power distribution facilities in the area, and staging areas are available where the canyon widens both upstream and downstream of the damsite.

The Kings River is one of the least disturbed large rivers in California and its wild trout population is considered one of the finest in the state. The California Department of Fish and Game designates the stretch between the upper limit of Pine Flat Reservoir to the confluence of the Middle and South Forks as a Wild Trout Fishery. From its confluence with Cabin Creek, about 9 1/5 miles above the proposed damsite, the Kings River is a federally designated Wild and Scenic River. The inundation area of the larger reservoir option would extend into the Wild and Scenic portion of the river. Both reservoir options would inundate portions of the Kings River Special Management Area. Inundation of either the Wild and Scenic reach or the Special Management Area would require Congressional approval.

Construction of a reservoir at Rodgers Crossing would be expected to cause unmitigable impacts to recreational resources in the area. Four U.S. Forest Service campgrounds are located along the river. Commercial and private white water rafting is conducted on the main stem of the Kings River above Pine Flat Reservoir.

Extensive riparian habitat would also be lost by creation of a Rodgers Crossing reservoir. This would pose a mitigation challenge simply because of the amount of habitat that would need to be restored or enhanced to compensate for the loss. Mill Flat Creek, a large tributary, joins Kings River about two miles upstream of the proposed dam site. This creek is an important spawning area for several native fishes in the Kings River, some of which are designated as State Species of Special Concern by the Department of Fish and Game. The new dam and reservoir would create barriers to fish migration.

This option will be dropped for several reasons. The extent of recreational impacts that would result from construction of Rodgers Crossing Reservoir may be unmitigable and the ability to mitigate fishery impacts appears low. An act of Congress would be required to permit inundation of the Kings River Special Management Area.



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